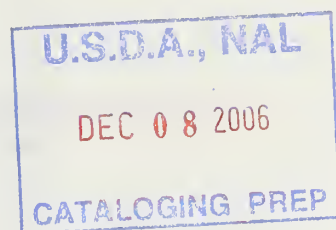


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DEFINING NEW RESEARCH TARGETS

NEW PRODUCTS/NEW USES

A "PROMPTING LIST"

**F. X. Werber
July 1995**

**United States
Department of
Agriculture**



National Agricultural Library

**Defining New Research Targets - New Products/New Uses
based on Agricultural Commodities**

"A Prompting List"

**Frank X. Werber
USDA/ARS
Beltsville, MD**

INTRODUCTION

A variety of factors stimulate researchers in New Uses for Agricultural Commodities to explore new product areas:

1. The scientific/technical challenge of creating new materials, new uses and new processes.
2. The very effective promotion by the New Uses Council, the Association for the Advancement of Industrial Crops, associations such as the United Soybean Board, Corn Refiners Association Inc., and the National Cottonseed Products Associations.
3. The use of renewable resources and the replacement of common plastics with biodegradable materials have become important driving forces in research. Many scientists are highly motivated to pursue projects with these environmental benefits, which is highly commendable.
4. Chance contacts with a company or companies which process agricultural commodities into end products, and recognize a particular need for a product or service which they themselves do not wish to fill, for various reasons.
5. For those independent souls who want to start their own business, the need to define specific targets which will generate cash flow and profits in the shortest possible time.

This outline is intended as a guide for those who would like to sharpen their focus at an **early stage of research**, to address real product needs and to gain some understanding of detailed product requirements. Furthermore, it will be useful to understand **possible advantages and limitations of products already on the market** to satisfy this need.

The following is not necessarily a "step-by-step" guide, but a disciplined approach to accumulating information:

1. **List the intended or possible new end-uses.**

Examples:

- a. If the investigated material is an oil, classify the projected end-uses.

As a lubricant:

(Automotive, aircraft, general purpose, etc.)

Edible:

(For frying, salad, processing, etc.)

- b. The product is a film-former, i.e. either by extrusion or by deposition from a solvent- or water base. There are a variety of options:

If it is expected to be biodegradable, possible uses are in food packaging--as coatings for paper, as packaging film, or as coatings on fruits and vegetables.

If the material is not biodegradable, but expected to be useful as an ingredient in paints and general purpose coatings on metals, wood, etc., then another whole line of investigation would need to be undertaken.

- c. Whatever the candidate material, whether oil, film-former, or porous solid, make a list of what you think are the product's leading attributes, i.e. those that you think might give you a good chance to fill a market need.

2. **Define competitive materials.**

In each projected end-use, understanding of some of the materials currently in use is essential, to avoid wasting untold hours because of **misdirected efforts on the basis of false expectations.**

- a. Carry out (or request) a literature search on each end-use. Look for references listing materials and products suggested. Look particularly for descriptions of properties and assessment of performance of various materials.
- b. **Patents:** Look particularly for recent patents (within the previous 10 to 20 years) with descriptive material. (Discount patents on compositions of matter which list multiple end-uses, but give no specifics on performance. These are likely to be someone's guess on the utility of new materials, not backed up by experience.)

3. **Contact manufacturers of competitive materials or end-products.**

A current listing of manufacturers of products for each end-use can be found in trade directories, such as:

Chemical Week Buyers Guide (Annual issue of *Chemical Week*, a McGraw Hill Publication)

Chemcyclopedia (Annual issue of *Chemical & Engineering News*, published by American Chemical Society)

Soya Blue Book (Published by *Soyatech Inc.*, Baharbor, Maine)

Thomas Registry of Products and Services
(Manufacturers, and distributors are listed in separate categories, state by state)

Thomas Food Industry Register

Buyers and Sellers Directory of the Forest Products Industry

Rubber Directory and Buyers Guide

Drug and Cosmetics Industry Directory

Chiltons Food Engineering Master--Ingredients (92-93)

Directory of American Research and Technology
(published annually by R. R. Bowker, a Reed
Reference Publishing Company)

The above and other directories are on the shelves of the National Agricultural Library in Beltsville, MD. However, many of them should be available at state universities and major regional libraries. If there is a problem identifying an appropriate directory, call the **Reference Section of the National Agricultural Library, 301-504-5204**, for help in locating a directory in the industry of interest.* Within the limits of their staff resources, they are very accommodating.

If in doubt which companies would be the most fruitful contacts, call the trade association for the product or business areas you are investigating, and ask to speak to the Technical Director, or the person handling technical contacts. The majority of trade associations are located in New York or Washington.

Trade associations for a variety of commodities or business areas are listed in the *Encyclopedia of Associations*, 1995 (4-volume set) and the *National Trade and Professional Associations of the United States*, 1994. These are also available through the NAL Reference Section.

Your technical contact should be able to provide some background on which companies or individuals would be most useful as information sources. In many cases, **trade association technical people may themselves have a detailed background in the area of interest.**

* The National Agricultural Library has an internal "Keyword Index to Reference Directory Titles," author: Wayne Olson.

Define the companies/individuals with whom you want to talk, and contact them on the phone. Elicit as much information as possible. Also, "network" at scientific meetings or relevant trade shows. Be aware that established competitors sometimes, though not usually, may not be too forthcoming with information if they think your proposed product will cut into their business. More likely, however, they may be very interested in acquiring it under license to add to their line!

4. **Market size and segmentation.**

It is important to get an estimate at an early stage on whether the business area you are addressing is of sufficient scope to warrant an indepth research program.

(Let's pick a bizarre example: one may get a lead that a lubricant with certain properties is useful for lubricating ropes which suspend heavy objects from a hook fastened to a wood beam. The main -or sole - market might be in capital punishment!. A \$500,000 research program would not be warranted.)

On the other hand, another end-use in the aircraft business, to lubricate jet engines of a certain size, might only offer a market of 3 to 4 million gallons per year. However, the value per gallon could be \$100 to \$200, and the market at least \$300 million, thus warranting a sizeable research program.

5. **Caution!**

Before undertaking detailed telephone conversations with industry contacts, ask yourself **how far you should or need to go in discussing your technical approach.** If you think you are likely to get into detail, you need to protect your ideas in one of two ways. Either go to the expense and effort to file a patent application, or ask your contact to execute a simple **Confidentiality Agreement.** In such agreements the signer agrees not to disclose information obtained in confidence on the subject area of technology, for a

specified period of time. Confidentiality Agreements also protect the receiver of the information, since they usually will exempt information obtained independently from a third party. A typical Confidentiality Agreement used by Agricultural Research Service scientists is included as an appendix. Scientists in private industry should consult an attorney, to add more definitive conditions to the agreement.

6. **Production costs/economics.**

Once you have gone far enough to define--in general terms--a process for making the product of interest, it is time to get a preliminary analysis of costs. This should be done with the help of an experienced industrial or cost engineer, who may employ one of several available software packages to assist in arriving at a manufacturing cost as well as a likely selling price.

Besides the elements which go into the direct manufacturing costs--direct capital investment, working capital, labor costs, utilities--sales- and other overhead--as well as projected profit margins will be factored into the expected price range. It is important to have a realistic view of this figure, or range, even though possibly licensees or manufacturers of the product in question will have different criteria for pricing. These depend on many factors such as whether or not they already have a sales force in the target markets, how they perceive the risk of failure, the expected promotion and marketing cost, etc.

7. At a later stage of development, the elements of a **"Strategic Analysis"** of how a projected product will be developed from the bench, through pilot development, into market introduction could be done. Such an analysis may bring out some product requirements not previously anticipated. However, this will usually be done with an industrial collaborator.

8. Should your contacts with an interested party proceed to the stage of negotiating a **licensing agreement**, you should take systematic steps to follow a business-like course and protect your invention:
 - a. If you are in the Agricultural Research Service, contact your Office of Technology Transfer representative for assistance.
 - b. If you are at a university, contact your Licensing or Development office.
 - c. If you are on your own or in industry, avail yourself of the services of a **patent attorney** experienced in negotiating licenses.

APPENDIX

LETTERHEAD

CONFIDENTIALITY AGREEMENT

It is necessary for the U.S. Department of Agriculture (or vise-a-versa) to disclose certain "confidential" or proprietary information to _____ for it must be determined if there is sufficient interest to [pursue intellectual property licensing or a Cooperative Research and Development Agreement or (specify)].

Confidential or Proprietary Materials to be Disclosed: '

_____ shall not disclose the "confidential" or proprietary information to anyone else nor use it for any purpose other than that given above.

This Confidentiality Agreement shall be considered null and void if _____ can demonstrate that: (1) _____ had possession of the information prior to disclosure; (2) the information is generally available to the public in generally available publications at time of disclosure; (3) the information becomes generally available to the public through no fault of _____ after disclosure; or (4) after disclosure, _____ receives the information from a third party having the right to the information and who does not impose a confidentiality obligation upon _____

FOR THE U.S. DEPARTMENT OF AGRICULTURE:

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